In the Claims

The following listing of the claims replaces all previous listings.

1.   (Currently Amended) A method of communicating multiple hazardous condition alarms between distributed hazardous condition detectors over a single signal line, comprising the steps of:

sensing a first hazardous environmental condition; and

generating an alarm signal on the single signal line upon sensing the first hazardous environmental condition, the alarm signal comprising at least one voltage pulse having a duration less than 100 milliseconds.

2.   (Original) The method of claim 1, wherein said step of generating an alarm signal comprises the step of generating a plurality of voltage pulses to form a multi-bit alarm signal.

3.   (Original) The method of claim 2, wherein the multi-bit alarm signal is an eight-bit alarm signal.

4.   (Original) The method of claim 3, wherein an upper nibble of the eight-bit alarm signal contains a start pattern, and wherein a lower nibble of the eight-bit alarm signal contains alarm and control information.

5.   (Original) The method of claim 2, wherein the step of generating a plurality of voltage pulses comprises the step of generating a plurality of voltage pulses of a duration between approximately 25 to 50 milliseconds every 100 milliseconds to form the multi-bit alarm signal.

6.   (Original) The method of claim 1, wherein the step of generating an alarm signal comprises the step of generating an alarm signal having a duration between approximately 25 to 50 milliseconds.

7.   (Original) The method of claim 1, wherein the step of generating an alarm signal comprises the step of generating an alarm signal comprising a plurality of voltage pulses at a frequency of approximately 10 hertz.

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8.   (Original) The method of claim 2, wherein the step of generating the multi-bit alarm signal is repeated periodically during the first sensed hazardous condition.

9.   (Original) The method of claim 2, wherein the step of generating the multi-bit alarm signal comprising the step of generating a first multi-bit pattern indicating the start of the first hazardous condition.

10.   (Original) The method of claim 9, wherein the step of generating the multi-bit alarm signal comprising the step of generating a second multi-bit pattern indicating the end of the first hazardous condition.

11.   (Original) The method of claim 1, further comprising the steps of :
sensing a smoke condition; and
generating a smoke alarm signal on the single signal line, the smoke alarm signal comprising a DC voltage signal having a duration longer than 100 milliseconds.

12.   (Currently Amended) A hazardous condition detector, comprising:
an alarm circuit;
an interconnection I/O circuit; and
a microcontroller coupled to the alarm circuit and the interconnection I/O circuit, the microcontroller determining a first environmental alarm condition upon receipt of a pulsed input from the interconnection I/O circuit of less than approximately 100 milliseconds, and a second environmental alarm condition upon receipt of a DC signal, said microcontroller commanding the alarm circuit to generate a first alarm type upon determining the first environmental alarm condition, and to generate a second alarm type upon determining the second environmental alarm condition.

13.   (Currently Amended) The detector of claim 12, wherein the microcontroller determines a pattern from the pulsed input forming a multi-bit alarm message in accordance with a communications protocol, the microprocessor determining an appropriate alarm pattern for the first environmental alarm condition from the pattern.

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14.   (Original) The detector of claim 12, wherein the microcontroller determines a pattern from the pulsed input forming a multi-bit alarm message in accordance with a communications protocol, the microprocessor determining an operating mode from the pattern.

15.   (Original) The detector of claim 12, further comprising a first hazardous condition detector circuit coupled to the microcontroller; and wherein the microcontroller determines the presence of a first hazardous condition based on input from the hazardous condition detector circuit, the microcontroller generating a second multi-bit alarm message in accordance with the communications protocol to alert external devices of the first hazardous condition, the microcontroller commanding the interconnection I/O circuit to generate a pulsed output to transmit the second multi-bit alarm message.

16.   (Original) The detector of claim 15, wherein the second multi-bit alarm message is an eight-bit alarm message.

17.   (Original) The detector of claim 15, wherein the interconnection I/O circuit generates an output DC voltage to signify a logic level 1, an output ground to signify a logic level 0, and a floating output to signify that the microcontroller has not determined the presence of a first hazardous condition.

18.   (Original) The detector of claim 17, wherein the I/O circuit generates output voltage pulses of between approximately 25-50 milliseconds every 100 milliseconds to signify a logic level 1, and maintains a ground to signify a logic level 0.

19.   (Original) The detector of claim 15, further comprising a smoke detector circuit coupled to the microcontroller; and wherein the microcontroller determines the presence of smoke alarm condition based on input from the smoke detector circuit, the microcontroller commanding the interconnection I/O circuit to generate a constant DC output to alert external devices of the smoke condition.

20.   (Currently Amended) A distributed hazardous condition detection and alarm system, comprising:

         a first hazardous condition detector

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a second hazardous condition detector; and

a 3-wire interconnect coupling said first detector to said second detector, and

wherein at least one of said first and said second detectors is operable to generate a ~~multi-bit~~ multi-pulse alarm message on the interconnect to indicate ~~the~~ detection of ~~a first hazardous condition~~ carbon monoxide, and wherein at least one of said first and said second detectors is operable to generate a constant DC level on the interconnect to indicate ~~the~~ detection of ~~a second hazardous condition~~ smoke.

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